2009 Integrated Energy Policy Report – Transportation Fuel Infrastructure Issues to be Discussed at the April 14-15, 2009 Workshop

This document supplements the notice for the April 14-15, 2009, *Integrated Energy Policy Report* (IEPR) workshop on transportation energy infrastructure issues. This supplement provides further details about questions and issues that staff has identified regarding the workshop topics and includes information about ongoing staff work from which Energy Commission forecasts of future transportation fuel infrastructure requirements are developed. The staff intends that this document will facilitate discussion and participation by stakeholders at the meeting and that the workshop participants may bring to the attention of the Commissioners, specific issues not yet identified by staff.

April 14, 2009 Workshop Sessions

Marine Terminals

Marine terminals in California are essential to receive imports of petroleum and renewable fuels, as well as periodic exports of feedstocks and transportation fuels. The adequacy of existing facilities to handle growing volumes of petroleum and renewable imports over the forecast period is a key area of interest to the Energy Commission. Staff uses demand forecasts for finished petroleum and renewable fuels along with different refinery and biorefinery production capacity expansion scenarios to estimate a range of potential future imports at marine terminals. Issues associated with ongoing and expanded use of marine terminals that will be covered in the workshop include:

- Status of Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) – where does the industry stand regarding compliance, will any facility operators decide to shut down their wharves, and what is the outlook for potential impacts, if any, on operations as companies upgrade their terminal?
- Renewable fuel import infrastructure – will importers be able to use existing marine terminals or do they need marine berths with different characteristics (types and size of storage tanks) to help ensure an adequate capability to receive greater quantities of renewable fuels and feedstocks?
- Petroleum fuel import infrastructure – what are the industry's expectations about refinery capacity expansions, and will the existing or planned petroleum fuel import infrastructure be adequate for projected fuel import requirements?

Distribution Terminals and Biorefineries

There are more than 50 distribution terminals throughout California that dispense transportation fuels destined for retail stations. The adequacy of existing facilities to dispense growing volumes of renewable fuels over the forecast period is a key interest for the Energy Commission. Federal and state regulations, including the Renewable Fuel Standard (RFS2) and the California Low-Carbon Fuel Standard (LCFS), will increase the minimum use levels for both ethanol and alternative diesel fuel. How quickly the system adapts to these changing requirements will ultimately determine if any constraints may develop. Discussion of the following items will help the Energy Commission anticipate issues that might come up during this transition to increased use of renewable fuels. Topics that will be discussed at the workshop include:

- Preliminary aggregated results of the Energy Commission's confidential distribution terminal survey. This survey was designed to assess the ability of individual distribution terminal facilities to increase the throughput of ethanol and alternative diesel fuels.

- Factors that can impact the forecast of demand for ethanol and alternative diesel fuels include:

    - The RFS2 outlook is assumed to be a baseline for renewable fuel use obligations in the nation and state. It should be noted that clarifications to compliance volumes and timing of cellulosic ethanol obligations have yet to be provided by the U.S. Environmental Protection Agency (U.S. EPA). Will there be sufficient quantities of traditional and advanced forms of renewable fuel available to meet these blending obligations?

    - The LCFS being developed by the California Air Resources Board is assumed to increase the quantities of ethanol and alternative diesel fuels to levels higher than the minimum obligations of the federal RFS2. How much more and over what period are two important issues that will need to be quantified.

- Factors that can impact the forecast of ethanol and alternative diesel fuel imports and distribution within the state include:

    - The mix of ethanol sources could shift from a primarily corn-based origin to another that uses different feedstocks that have lower carbon lifecycle impacts as companies comply with California's LCFS. Does this shift mean that sugarcane-derived ethanol imports will increase? Will California's ethanol production capacity grow and also use increasing quantities of non-corn feedstocks such as biomass waste, sorghum, sugar cane, and other crops? If so, how could the level of imports change?

    - The economic health of the ethanol and biodiesel industry has declined over the last year. Plant closures are expected to be temporary for existing California biorefineries, but the outlook for future expansions of biorefinery production capacity could be less optimistic due to lack of access to capital and potential uncertainty associated with the optimal type of renewable fuels that should be targeted for production to help meet the market demand for both the RFS2 and the LCFS.

- What other issues could potentially affect the ability of terminals to acquire, store, and distribute adequate supplies of petroleum and renewable fuels?

<u>Retail Refueling and Recharging Infrastructure</u>

There are nearly 10,000 retail stations throughout the state that are used to dispense nearly 20 billion gallons of transportation fuels per year. The increased use of renewable and alternative fuels will require adequate development of the retail station infrastructure to help ensure sufficient distribution throughput capability – acknowledging that supply and vehicle populations are necessarily interrelated elements. The following issues and questions would be discussed at the workshop.

- The availability of E-85 dispensers is expected to continue growing, but there are several Issues that can affect the overall need for and availability of E-85 retail dispensers. The RFS2 and LCFS requirements may increase the blending obligations for ethanol beyond the current

limit of 10 percent by volume in gasoline. However, any increase of this blending limit (referred to by the industry as a “blend wall”) will have an impact on the timing and need for expanded E-85 dispensers in California, raising the following questions.

- Will U.S. EPA propose a potential increase of the ethanol blend wall from 10 percent to a higher percentage by volume in their RFS2 clarification?
- Does the Underwriter Laboratory approval of legacy dispensers for E-15 distribution address all of the potential equipment compatibility concerns for retail station owners and equipment manufacturers?
- What are other automotive and environmental issues associated with the use of higher ethanol blends and can they be overcome?
- Are there permit or new source review issues that present challenges to expansion of E-85 retail dispensers?
- Will the population of flexible fuel vehicles (FFVs) and automotive industry outlook for new models be adequate to accommodate the minimum demand levels anticipated for E-85?
- What type of retail pricing requirements would provide the greatest level of consumer information – e.g. gasoline-gallon equivalent pricing?

- Issues that can affect availability of alternative diesel fuel at retail stations.
  - Underground storage tank concerns

- Issues that can affect availability of natural gas, propane, or hydrogen refueling at retail locations.
  - Compressed and liquefied natural gas capacity and throughput issues
  - Aging of natural gas fleet fueling equipment
  - Availability of propane supplies
  - Fuel quality standards for fuel cell hydrogen
  - Hydrogen storage, metering, dispensing, and related regulatory issues

- Issues that can affect availability and impacts of electric recharging.
  - The geographic distribution of electric-drive vehicles may vary considerably. What consequences might this have for distribution infrastructure requirements?
  - How will the large-scale introduction of plug-in hybrids and full electric vehicles affect recharging infrastructure, and what is needed to ensure that incremental vehicle electricity demand occurs off-peak?

- Other issues potentially impacting retail station availability will also be examined.
  - What is the current status of the Enhanced Vapor Recovery (EVR) regulation, the extent of non-compliance, and potential loss of fuel supplies for certain communities?
  - Are there additional retail station compliance requirements that could result in a reduced number of outlets over the near-to mid-term period?

April 15, 2009, Workshop Sessions

<u>Crude Oil Import and Storage</u>

Staff will present its preliminary crude oil import forecast along with a description of new facilities being developed to accommodate an expected increase of crude oil imports, especially for Southern California. The outlook for crude oil imports is a consequence of declining California crude oil production and the degree to which refiners expand their ability to process crude oil at their facilities. Responses to the following questions will assist staff in determining the state's crude oil import requirements.

- Status of Berth 408 crude oil import facility project – when will this facility be operational?
- At what rate of growth will refinery capacity to process crude oil expand in the state?

A proposal that has periodically been suggested is to expand the existing federal Strategic Petroleum Reserve to the Western States (including California). This idea would create potential economic opportunities but also raises the following questions.

- Why pre-position crude oil barrels in the Western States?
- What volume of crude oil should be stored, and how should the barrels be refreshed as part of the overall system?
- What is the purpose of such a reserve, and when could the barrels be accessed by market participants?
- Where should such a facility or facilities be located?

Petroleum Product Pipelines

Transportation fuels are delivered to the neighboring states of Nevada and Arizona primarily through a petroleum product pipeline distribution infrastructure. The transportation fuel demand outlook for these states, along with any regional and California pipeline expansion projects, could impact the forecast of pipeline exports from California. Changing levels of fuel exports to these states are one of the factors that can have an important impact on the level of imports into California of finished fuels and their associated blending components. Discussion of the following proposals will enable the Energy Commission to better understand the potential impacts.

- Would any new regional petroleum product pipeline projects impact the forecasted level of pipeline exports from this state?
    - The Holly Energy project, a proposed Utah-to-Las Vegas petroleum product pipeline, could decrease the need for California sources of transportation fuels for Southern Nevada.
    - Operational changes to the Longhorn Pipeline have also shifted flows of gasoline and diesel fuel from California to Arizona. Are these shifts temporary or will Southwestern pipeline infrastructure operations continue to move away from a greater dependence on California-sourced transportation fuels?

- The shipping of renewable fuels through multi-product pipelines is of interest due to the potential to reduce other distribution infrastructure requirements.
    - Ethanol shipments in Florida petroleum product pipeline
    - B-5 shipments in SE United States and possibly Oregon
    - Are these operational changes transferrable to California?

Other Issues

Any other issues that could impact petroleum, renewable, and alternative fuel infrastructure, especially over the near-to mid-term period, that was inadvertently omitted from this outline should also be raised by interested parties at the appropriate sessions during the workshop.